

# PATENT SPECIFICATION



Application Date: Jan. 4, 1935. No. 372/35.

450,149

Complete Specification Left: Jan. 4, 1936.

Complete Specification Accepted: July 6, 1936.

## PROVISIONAL SPECIFICATION

### Improvements in or relating to Imitation Solid Fuel Fires

We, GEORGE HENRY COLLINS and HERBERT FRANCIS COLLINS, both Subjects of the King of Great Britain, and both of Premier Works, Keeley Street, Birmingham 9, in the County of Warwick, do hereby declare the nature of this invention to be as follows:—

This invention relates to imitation solid fuel fires, and concerns more particularly fires of the kind including a screen or like member having a light receiving surface, and a flicker device comprising a light source and means for producing moving and changing light beams which are transmitted to the light receiving surface to produce thereon an appearance of flame and/or smoke.

The object of the present invention is to provide improved means for illuminating the imitation fuel to produce a more realistic appearance as well as to provide certain improvements in the construction of fires of this kind.

According to one aspect of this invention, the screen is arranged with one face thereof disposed outwardly of the fire and with the opposite or inner face adapted to receive the moving or changing light beams produced by the flicker device, said screen or part thereof being capable of permitting the passage of light there-through and outwardly of the fire, the inner or opposite face of the screen being adapted to receive the moving or changing light beams produced by the flicker device, said screen or part thereof being adapted to obstruct the free passage of the moving light beams therethrough and outwardly of the fire to form thereon an appearance of flame and/or smoke visible from the front of the fire, and an additional light source is disposed behind or beneath the fuel and adapted to transmit steady or non-flickering light to the imitation fuel to produce a glowing appearance.

For instance, the screen or part thereof may be disposed above the level of and immediately behind the imitation fuel to produce an appearance of flame and/or smoke arising from glowing or burning fuel.

Conveniently, the screen may include a portion disposed behind the imitation fuel

and the additional light sources may comprise an electric lamp supported from the rear part of the fire and projecting forwardly through an aperture provided in the screen.

The fire may include a portion which is substantially or completely opaque and disposed between the flicker device and the fuel to prevent substantially any moving or changing light beams impinging thereon, whereby the fuel presents an appearance of steady glowing or burning.

According to another aspect of this invention, there is provided an imitation fire including a screen or like member having a light receiving surface, a flicker device comprising an electric lamp, and means for producing moving or changing light beams which are transmitted to the light receiving surface, and a further lamp disposed beneath or behind the imitation fuel and adapted to transmit a steady light thereto to produce a glowing appearance, said lamps being carried by a common support mounted detachably upon the fire structure to permit of their ready removal from the fire.

According to a further aspect of this invention, the fire is provided with an additional light source disposed behind or beneath the fuel and a reflecting surface adapted to reflect the light produced thereby on to the inner surface of the fuel.

For instance, such reflecting surface may comprise a bright metal sheet disposed substantially vertically and behind the additional light source.

Such sheet may be secured to the screen to form therewith a unitary structure which may be mounted removably within the fire.

Alternatively, the screen may include a light transmitting portion disposed behind the fuel in a more or less vertical position, and the outer or front face of such portion may be made of a reflecting nature.

In one construction, the fire may be of the form described in the Complete Specification of our pending Application No. 32573/33 (Serial No. 426,887), including a fire space and an imitation grate within which is disposed imitation fuel or hollow

translucent form; while at the rear of the fire space may be mounted a flicker device comprising an electric lamp having a rotatably mounted hollow body arranged therearound, such device being constructed substantially as described in Specification No. 404,302.

The flicker device is arranged between a pair of reflectors, and the latter and the lamp may be carried by a supporting plate mounted detachably upon the base of the fire in the manner described in the aforesaid Specification.

Disposed in front of the flicker device 15 and behind the imitation fuel and extending above the latter, is a screen formed from translucent or transparent material and constructed substantially as described in Specifications Nos. 29164/33 (Serial No. 427,412) or 32573/33 (Serial No. 426,887); the upper half of the screen being made of somewhat curved configuration so that it extends rearwardly of the upper part of the fuel, the latter and the 25 screen when viewed from the front presenting together a somewhat stepped appearance.

For transmitting steady or non-flickering light to the interior of the hollow translucent fuel, there is provided an additional electric lamp disposed in front of the flicker device beneath the fuel and mounted on the usual holder, the latter being supported by a bracket carried by 35 the plate supporting the flicker device so that both lamps can be readily withdrawn together from the fire when their replacement becomes necessary.

Conveniently, the fuel illuminating lamp projects in a somewhat forward direction through an opening formed in the lower part of the screen in the manner described in Specifications Nos. 29164/33 (Serial No. 427,412) and 32573/33 (Serial No. 426,887), so that the bulb portion of the lamp is disposed in front of the screen and adjacent the interior of the fuel.

Such a method of mounting the fuel illuminating lamp offers the advantage 50 that the leads necessary for supplying the current are disposed at the rear of the fire, while the lamp occupies a comparatively small proportion of the fuel space, but if desired, the lamp may be disposed completely in front of the screen and in a more or less vertical position, in which case the screen need not be apertured. Further, in the first described method of mounting the lamp, this may be carried independently of the flicker lamp, and both these 60 lamps may be supported rigidly upon the interior of the fireplace.

The fuel illuminating lamp may be coloured to an amber or reddish tint to 65 impart the requisite colour to the fuel

which is thus illuminated to a high degree by steady non-flickering light, so that it presents an appearance of steady glow.

With such an arrangement, the apertures in the upper part of the cylindrical skirt of the hollow body described in Specification No. 403,302 may be omitted, since the said lamp provides sufficient illumination for the fuel.

To still further increase the amount of light falling upon the fuel, the lower half of the translucent screen behind the fuel may have its outer surface silvered or made otherwise reflecting, so that the light from the lamp is thrown forwardly from the screen on to the interior of the fuel, while in order to prevent the moving or changing light beams being transmitted to the fuel and thus interfering with the appearance of steady glow, the lower part of the screen behind the fuel and in front of the flicker device may be rendered substantially or completely opaque as by darkening or blackening this part.

Alternatively, the screen may comprise a light transmitting portion disposed above the level of the fuel upon which is produced the flame and smoke appearance, while the remainder of the screen behind the fuel and in front of the flicker device may comprise a rectangular sheet of metal having its outer face bright to reflect the light from the fuel illuminating lamp, and such sheet may be connected rigidly to the light transmitting portion to form therewith a unitary structure which may be mounted removably in the fire.

Alternatively, such sheet may be formed entirely separately of the screen, and may be disposed in a vertical position immediately in front of the flicker device, and the screen may be of curved configuration over its entire depth and extend from the upper edge of the sheet.

For instance, the upper edge of the sheet may be turned downwardly in a rearward direction, the free edge of the downturned portion being turned upwardly to provide a channel disposed immediately behind the upper edge of the sheet, and the lower edge of the translucent screen may be inserted within the channel so that it is secured either detachably or permanently to the sheet.

Alternatively, the channel may be constituted by a separate strip of metal which may be riveted to the rear face of the sheet immediately behind the upper edge thereof, the strip being spaced therefrom to provide a channel shaped recess for the reception of the screen which is again secured detachably or permanently thereto.

In the above constructions wherein the sheet is formed from metal, it serves to

prevent any flickering light from reaching the imitation fuel.

With a fire constructed as described above, the imitation fuel can be illuminated to a very high degree, while by forming the screen upon which the moving light beams are projected, in the manner described in Specifications Nos. 29164/33 (Serial No. 427,412) and 32573/33 (Serial No. 426,887), the flame or smoke effect is particularly realistic, so that the fire as a

whole presents an unusually realistic appearance of flame and/or smoke rising from fuel which appears to burn with a steady glow.

Dated the 22nd day of November, 1934.

FORRESTER, KETLEY & CO.,

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## COMPLETE SPECIFICATION

### Improvements in or relating to Imitation Solid Fuel Fires

We, GEORGE HENRY COLLINS and HERBERT FRANCIS COLLINS, both Subjects of the King of Great Britain, and both of Premier Works, Keeley Street, Birmingham 9, in the County of Warwick, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to imitation solid fuel fires and concerns fires of the kind including imitation fuel, a light receiving surface such as a screen or like member, and a flicker device comprising a light source and means for producing moving or changing light beams which are transmitted to the light receiving surface to produce thereon an appearance of flame and/or smoke.

According to one aspect of this invention, the moving or changing light beams are transmitted to a light receiving surface without passing through the imitation fuel, an additional light source being disposed behind or beneath the fuel and adapted to emit steady or non-flickering light which is transmitted to the fuel, and means disposed behind the lower portions of said imitation fuel, so that it is completely or virtually completely hidden from view by said lower portions, being provided for preventing the moving or changing light beams from impinging on to the lower portions of the imitation fuel so that the lower portions of the latter appear to burn with a steady glow.

According to a further aspect of this invention, the moving or changing light beams are transmitted to a light receiving surface without passing through the imitation fuel, an additional light source being disposed behind or beneath the fuel and adapted to emit steady or non-flickering light which is transmitted to the fuel, the fire having an opaque portion or member disposed between the fuel and the flicker device, the fuel being arranged in front of said opaque portion or member and

completely or virtually completely hiding it from view, said portion or member being adapted to prevent or substantially to prevent the moving or changing light beams from impinging on to the imitation fuel so that the latter presents an appearance of steady glow.

According to another aspect of this invention, the fire includes a screen arranged with one face thereof disposed outwardly of the fire and with the opposite or inner face adapted to receive the moving or changing light beams produced by the flicker device, said screen or part thereof being capable of permitting the passage of light therethrough and outwardly of the fire, the inner or opposite face of the screen being adapted to receive the moving or changing light beams produced by the flicker device, said screen or part thereof being adapted to obstruct the free passage of the moving light beams therethrough and outwardly of the fire to form thereon an appearance of flame and/or smoke visible from the front of the fire, an additional light source being disposed behind or beneath the fuel and adapted to transmit steady or non-flickering light to the imitation fuel, and screen means being provided for preventing or substantially preventing the moving or changing light beams from impinging on to the lower portions of the imitation fuel so that the lower portions of the latter present an appearance of steady glow.

For instance, the screen or part thereof may be disposed above the level of and immediately behind the imitation fuel to produce an appearance of flame and/or smoke rising from glowing or burning fuel.

Conveniently, the screen may include a portion disposed behind the imitation fuel and the additional light source may comprise an electric lamp supported from the rear part of the fire and projecting forwardly through an aperture provided in the screen.

According to yet another aspect of this

invention, the fire is provided with an additional light source disposed behind or beneath the fuel and adapted to emit steady or non-flickering light, said screen 5 carrying a reflecting surface adapted to reflect said steady or non-flickering light on to the fuel so that the latter presents a glowing appearance, and said reflecting surface being adapted to prevent or substantially to prevent the moving or changing 10 light beams from impinging on the imitation fuel.

For instance, an opaque portion may be formed by darkening or otherwise rendering opaque a part of the said light transmitting screen, or it may comprise a metal or other sheet or other opaque member which may be disposed beneath the light transmitting portion of the screen and secured thereto to form with the 20 screen a unitary structure and with either arrangement the outer face of the opaque portion which is directed towards the fuel may be of a reflecting nature so that it serves to reflect the non-flickering light 25 from the additional light source on to the imitation fuel.

In fires of the above kind, the means for producing the moving or changing light beams usually comprises an opaque 30 body adapted for movement and having openings arranged in the path of the light beams.

As hitherto constructed the opaque body 35 has been made of bright metal and has usually been disposed immediately beneath the light receiving surface, such an arrangement as applied to fires made in accordance with the present invention 40 being open to the objection that there is a possibility of light from the additional light source being reflected by the bright metal of the body on to the light receiving surface with resultant detracton from the 45 realism of the flame and smoke effect and according to a subsidiary feature of this invention, the surface of the opaque body which is directed towards the light receiving surface is made partly or wholly of 50 a non-reflecting nature.

For instance the said surface may be blackened or darkened, so that no light is reflected from the body on to the light receiving surface.

We are aware of the fact that it has already been proposed to provide an electric fire of the kind forming the subject of the present invention with an additional light source adapted to transmit steady or non-flickering light to the fuel, an ash simulating surface being disposed beneath the 60 additional light source and the fuel and between the flicker device and the fuel which serves to prevent flickering light 65 from impinging upon the greater portion

of the fuel, the fire having an aperture below the fuel through which aperture the ash surface is visible to an observer in an ordinary position in front of the fire.

It has further been proposed to provide 70 fires of the above kind with a light receiving surface in the form of a translucent screen extending above the imitation fuel, and to provide a reflector disposed beneath the fuel for reflecting 75 flickering light from the flicker device on to the fuel to illuminate the latter, or to illuminate the fuel from a source of light separate from the flicker device either instead of the flicker device or in addition 80 thereto.

In order that our invention may be clearly understood and more readily carried into practice, we have appended hereunto one sheet of drawings illustrating the same, wherein:— 85

Figure 1 is a cross sectional view of one form of imitation solid fuel fire constructed in accordance with this invention. 90

Figure 2 is a perspective view of the screen forming part of the fire shown in Figure 1. 95

In the construction illustrated, the fire is of a form generally similar to that described in Specification No. 426,887, including a fire space and an imitation grate within which is disposed imitation fuel 10 of hollow translucent form, while at the rear of the fire space is mounted a flicker device shown generally at 11 and comprising an electric lamp having a rotatably mounted hollow body 12 arranged therearound, such body being 100 formed from sheet metal and being of generally inverted cup-like shape including a dome-shaped top 12a carrying a dependant cylindrical skirt 12b; the flicker device being in fact constructed substantially in accordance with Specification No. 404,302. Although in the construction 110 shown, the flicker device is secured directly to the base 13 of the fire, if desired it may be mounted in the manner illustrated in Specification No. 404,302. 115

Arranged substantially forwardly of the flicker device and behind the imitation fuel is a light receiving surface constructed as a screen 14 comprising a translucent or transparent portion 15 120 which is constructed in a manner similar to the screen shown in Specifications Nos. 426,887 and 427,412, so that the said translucent portion is formed on its outer face with a matt surface as described in these prior Specifications and as shown 125 in Specification No. 426,887 is of somewhat curved configuration so that it extends rearwardly of the upper part of the fuel, the latter and the screen when 130

viewed from the front of the fire presenting together a somewhat stepped appearance.

In order to prevent the moving or changing light beams produced by the flicker device 11 from impinging at any rate to an appreciable extent, on the inner surface of the hollow translucent fuel 10, an opaque portion or member constructed as a metal sheet 16 is disposed between the flicker device and the imitation fuel and behind the lower portion of the fuel so that it is completely hidden or virtually completely hidden from view by the imitation fuel, and this metal sheet is secured permanently to the lower edge of the screen 14, and is disposed in a more or less vertical position. Conveniently, the sheet 16 serves also to support the screen and is for this purpose provided at its bottom edge with a pair of spaced flanges 17 which are secured to the base plate 13 of the fire; additional support for the screen being provided by brackets 18 secured to opposite sides of the fire and indicated generally in Figure 1.

The outer or front face 19 of the sheet is polished so that it forms a reflecting surface.

Conveniently, the lower part of the sheet 16 is formed medially with an opening 20 through which extends an additional light source comprising an electric lamp 21 adapted to emit steady or non-flickering light and this lamp is secured detachably in the usual holder 22 which is carried by a bracket 23 mounted permanently upon the base plate 13 so that the lamp is supported in an inclined forwardly extending position so that it is disposed both beneath and behind the hollow imitation fuel 10.

By mounting the lamp 21 in this manner, the leads necessary for supplying the current thereto can be disposed at the rear of the fire while the lamp occupies a comparatively small proportion of the fuel space, but if desired, it may be disposed completely in front of the screen and in a more or less vertical position, in which case the screen need not be provided with an opening.

In order to reflect the non-flickering light from the lamp 21 in an upward direction on to upper portions of the fuel 10, the sheet 16 is formed on opposite sides of the opening 20 with a pair of vertical slits, the partially severed portions of metal being bent forwardly and upwardly as shown at 24 to provide on opposite sides of the lamp 21 a forwardly extending reflecting surface which serves to reflect the light in the desired upward direction. If desired, only one of such portions 24 may be provided.

With the above described construction, very little flickering light impinges on the fuel from the flicker device and the fuel is illuminated almost entirely by a steady non-flickering light emitted from the lamp 21 so that the fuel, particularly the lower portion thereof presents an appearance of steady glow and the realistic appearance of the fire during use is enhanced.

If desired, the amount of flickering light reaching the fuel may be reduced still further by increasing the depth of the opaque portion 16 and decreasing the depth of the light transmitting portion 15 of the screen, but the construction shown will be found to provide a sufficiently realistic appearance in practice.

To increase still further the realistic appearance of the fire, the fuel illuminating lamp 21 may be coloured to an amber or reddish tint so that the requisite glowing colour is imparted to the fuel.

In order to reduce still further the amount of flickering light impinging on the imitation fuel, the apertures in the upper part of the cylindrical skirt of the hollow body described in Specification No. 404,302 are with the present construction omitted.

For preventing the light emitted from the lamp 21 being transmitted through the lower part of the translucent screen 14 on to the exterior of the dome-shaped top of the hollow body 12 and being reflected therefrom on to the upper part of the screen, thus producing on the screen a rotating image of the hollow body with resultant detracting from the realism of the flame and smoke effect, the exterior of the dome-shaped top and also the upper portion of the cylindrical skirt of the hollow body is painted a dull black as indicated at 25.

Instead of making the upper part of the hollow body non-reflecting by painting its surface a dull black, it may be darkened by being oxidised chemically or by suitable heat treatment, or may be made otherwise of a non-reflecting nature by coating it with any other light absorbing paint.

Further, instead of normally darkening the upper part of the hollow body, it may be only partially darkened to merely reduce substantially the amount of light reflected.

With the present construction, the opaque portion 16 forms with the translucent portion 15 of the screen a unitary structure which can be readily mounted in position in the fire. If desired, however, the portion 16 may be made entirely separately from the translucent portion 15. Further, instead of making the outer

surface of the light transmitting portion 15 matt or ground over its entire surface as described in Specification No. 427,412 it may be matt over part of its surface only, the remaining part being adapted to permit of the free passage of the moving light beams therethrough and outwardly of the fire.

In an alternative construction, the light transmitting portion 15 may extend substantially to the base plate 13 of the fire and the opaque portion may be formed on this surface by silvering the outer surface of the lower half of the light transmitting portion, such silvering providing a reflecting surface for reflecting the light from the lamp 21 on to the imitation fuel and at the same time owing to its substantially opaque nature reducing substantially the amount of flickering light transmitted to the fuel in a manner similar to the preceding construction.

With a fire constructed in accordance with the present invention, the imitation fuel can be illuminated to a very high degree while by forming the screen upon which the moving light beams are projected in the manner described in Specifications Nos. 426,887 and 427,412 the flame or smoke effect can be made particularly noticeable so that the fire as a whole presents an unusually realistic appearance with a well-defined appearance of flame and/or smoke rising from fuel which appears to burn with a bright, steady glow.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An imitation fire of the kind referred to, characterised in that the moving or changing light beams are transmitted to a light receiving surface without passing through the imitation fuel, an additional light source being disposed behind or beneath the fuel and adapted to emit steady or non-flickering light which is transmitted to the fuel, and means disposed behind the lower portions of said imitation fuel, so that it is completely or virtually completely hidden from view by said lower portions, being provided for preventing the moving or changing light beams from impinging on to the lower portions of the imitation fuel so that the lower portions of the latter appear to burn with a steady glow.

2. An imitation fire of the kind referred to, characterised in that the moving or changing light beams are transmitted to a light receiving surface without passing through the imitation fuel, an additional light source being disposed behind or be-

neath the fuel and adapted to emit steady or non-flickering light which is transmitted to the fuel, the fire having an opaque portion or member disposed between the fuel and the flicker device, the fuel being arranged in front of said opaque portion or member and completely or virtually completely hiding it from view, said portion or member being adapted to prevent or substantially to prevent the moving or changing light beams from impinging on to the imitation fuel so that the latter presents an appearance of steady glow.

3. An imitation fire of the kind referred to, wherein the light receiving surface comprises a screen arranged with one face thereof disposed outwardly of the fire and with the opposite or inner face adapted to receive the moving or changing light beams produced by the flicker device, said screen or part thereof being capable of permitting the passage of light therethrough and outwardly of the fire, the inner or opposite face of the screen being adapted to receive the moving or changing light beams produced by the flicker device, said screen or part thereof being adapted to obstruct the free passage of the moving light beams therethrough and outwardly of the fire to form thereon an appearance of flame and/or smoke visible from the front of the fire, an additional light source being disposed behind or beneath the fuel and adapted to transmit steady or non-flickering light to the imitation fuel, and screen means being provided for preventing or substantially preventing the moving or changing light beams from impinging on to the lower portions of the imitation fuel so that the lower portions of the latter present an appearance of steady glow.

4. An imitation fire of the kind referred to, and wherein the light receiving surface comprises a screen, characterised in the provision of an additional light source disposed behind or beneath the fuel and adapted to emit steady or non-flickering light, said screen carrying a reflecting surface adapted to reflect said steady or non-flickering light on to the fuel so that the latter presents a glowing appearance, and said reflecting surface being adapted to prevent or substantially to prevent the moving or changing light beams from impinging on the imitation fuel.

5. An imitation fire according to Claim 3 or 4, further characterised in the provision of a portion or member which is substantially or completely opaque, said portion being disposed between the flicker device and the fuel and being adapted to reduce substantially the impingement of moving or changing light beams on to the

fuel so that the latter presents an appearance of steady glowing or burning.

6. An imitation fire according to Claim 2 or 5, and wherein the light receiving surface comprises a screen, further characterised in that the opaque portion is carried by the screen so that it forms therewith a unitary structure.

7. An imitation fire according to any of Claims 2, 5 or 6, further characterised in that the opaque portion is provided with a reflecting surface adapted to reflect on to the fuel the steady non-flickering light emitted from the additional light source.

8. An imitation fire according to Claim 7, wherein the opaque portion comprises a metal sheet arranged substantially vertically, the outer surface of which is polished.

9. An imitation fire according to Claim 8, further characterised in that the metal sheet is provided with one or more integral forwardly extending portions bent out of the plane of the sheet and adapted to reflect in an upward direction on to the upper portion of the imitation fuel the steady or non-flickering light emitted from the additional light source.

10. An imitation fire of the kind referred to comprising in combination hollow translucent imitation fuel, a screen formed from material of a transparent or translucent nature extending upwardly of the fire above the level of the imitation fuel, said screen being arranged with one face thereof disposed outwardly of the fire, means for transmitting to the inner face of said screen light beams moving towards the upper part thereof, the outer face of the screen having a matt or ground surface adapted to obstruct the free passage of the moving light beams and produce thereon an appearance of flame and/or smoke moving upwardly, an opaque portion adapted substantially to prevent flickering light being transmitted to the imitation fuel, said portion having an aperture provided therein, and an

electric lamp extending through said aperture and adapted to emit steady or non-flickering light which is transmitted to the imitation fuel, so that the fire presents an appearance of flame and/or smoke rising upwardly from imitation fuel burning with a bright steady glow.

11. An imitation fire according to any of the preceding Claims and wherein the means for producing the moving or changing light beams comprises an opaque body adapted for movement and having openings arranged in the path of the light beams and disposed substantially beneath the light receiving surface, further characterised in that the surface of the opaque body which is directed towards the light receiving surface is made partly or wholly of a non-reflecting nature whereby the reflection of light from the additional light source by said body on to the light receiving surface is substantially or entirely prevented.

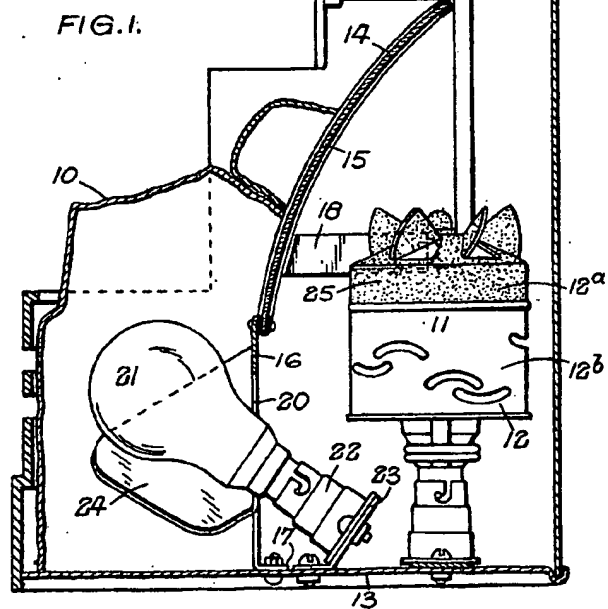
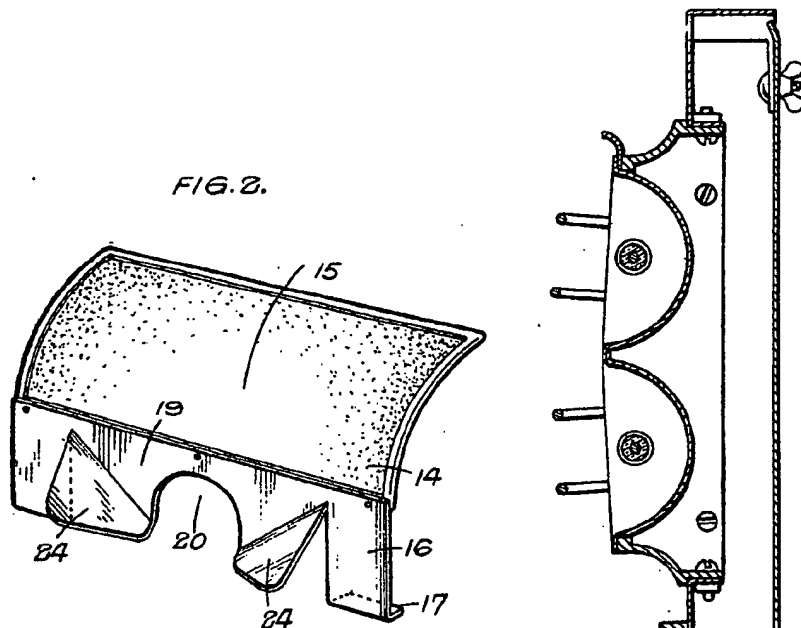
12. An imitation fire according to Claim 11, wherein the opaque body is of hollow form and mounted rotatably around the light source, characterised in that the upper part of the exterior of the hollow body is blackened or darkened so that substantially no light is reflected from the exterior of the body on to the light receiving surface.

13. In an imitation fire of the kind referred to, means for illuminating the imitation fuel constructed substantially as described with reference to, and as shown in, the accompanying drawings.

14. An imitation fire constructed substantially as described with reference to, and as shown in, the accompanying drawings.

Dated the 23rd day of December, 1935.  
FORRESTER, KETLEY & CO.,  
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[This Drawing is a reproduction of the Original on a reduced scale.]





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